2016

Land-Based Freight Flows Between the US and its NAFTA Neighbors

Border Policy Research Institute

BORDER POLICY RESEARCH INSTITUTE
WESTERN WASHINGTON UNIVERSITY

BORDER POLICY BRIEF | FALL 2016

Land-Based Freight Flows Between the U.S. and its NAFTA Neighbors

Volume 11, Fall 2016 Web Address: www.wwu.edu/bpri

2015 U.S. Trade Flows

With Canada	$billion	%
2-way total	**$575.3**	
U.S. Exports	280.1	
By Mode		
Truck	188.5	67.3%
Rail	28.2	10.1%
Pipeline	6.6	2.3%
Other	56.8	20.3%
U.S. Imports	295.2	
By Mode		
Truck	146.7	49.7%
Rail	62.3	21.1%
Pipeline	46.8	15.8%
Other	39.4	13.3%
With Mexico	**$billion**	**%**
2-way total	**$531.1**	
U.S. Exports	236.4	
By Mode		
Truck	163.4	69.1%
Rail	28.7	12.1%
Pipeline	3.5	1.5%
Other	40.8	17.3%
U.S. Imports	294.7	
By Mode		
Truck	213.1	72.3%
Rail	46.0	15.6%
Pipeline	0.2	0.1%
Other	35.4	12.0%
Combined (all modes)	**$billion**	
2-way total	**1106.3**	
U.S. Exports	516.4	
U.S. Imports	589.9	

Introduction. This Brief provides an overview of the flow of goods between the U.S. and its two NAFTA neighbors, Canada and Mexico.[1] For the U.S., the value and composition of freight that flows between its northern and southern borders varies significantly by port and region, and this variety inevitably has implications for border management policies and infrastructure investment needs. By providing an overview of the economic geography of the U.S.'s land-based trade with its NAFTA partners, this Brief seeks to inform decisions about border management and infrastructure investment, while also illustrating the value of cross-border trade to the U.S. economy. With a new U.S. administration approaching, it is particularly important to highlight the central role that borders and cross-border trade play throughout the U.S. economy.

This Brief takes a U.S.-centric focus, using 2015 data from the North American Transborder Freight Database[2] and the U.S. dollar as the measure of freight flow volume. While dollar value is an indirect metric of actual traffic (i.e., $1 million of sawdust fills more trucks than $1 million of iPods), it is the only metric in the database applicable to both imports and exports at both the Mexican and Canadian borders.

Balance of Trade. The sidebar table presents trade-balance data delineated by transportation mode. Trade with Canada exceeds that with Mexico, and deficits occur with both.[3] Trucked freight is the most common form of trade with both nations, though a significant amount occurs by pipeline and other modes (mostly sea and air) that do not require processing at a land port. Since 2009, trade via truck and rail rose more than trade via pipeline, and exports via pipeline rose faster than imports, likely due to price

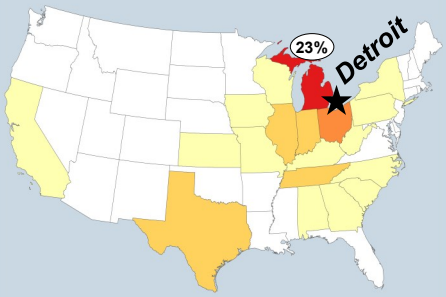
2-Way Trade (Truck + Rail) Traversing the 13 Largest U.S. Ports

Each of these 13 ports handle > $10 billion per year of 2-way trade (truck + rail). Together they handle 85% of the goods traversing the land borders.

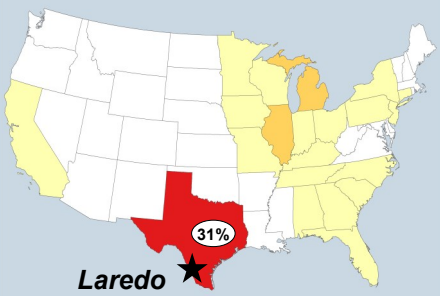
Laredo and Detroit, the two largest U.S. ports, are the premier border gateways serving the integrated mid-continent manufacturing corridor.

EXPORTS

Origins of U.S. Exports Crossing a Given Port



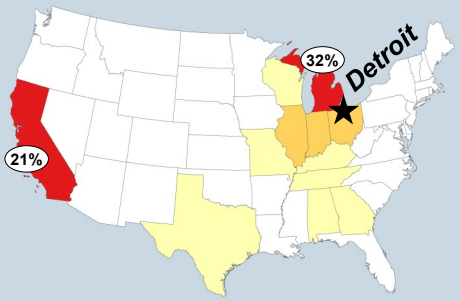
Detroit: $70.0 B Exports



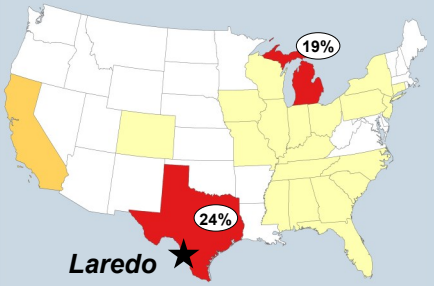
Laredo: $91.6 B Exports

IMPORTS

Destinations of U.S. Imports Crossing a Given Port



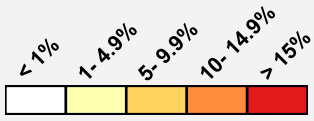
Detroit: $59.2 B Imports



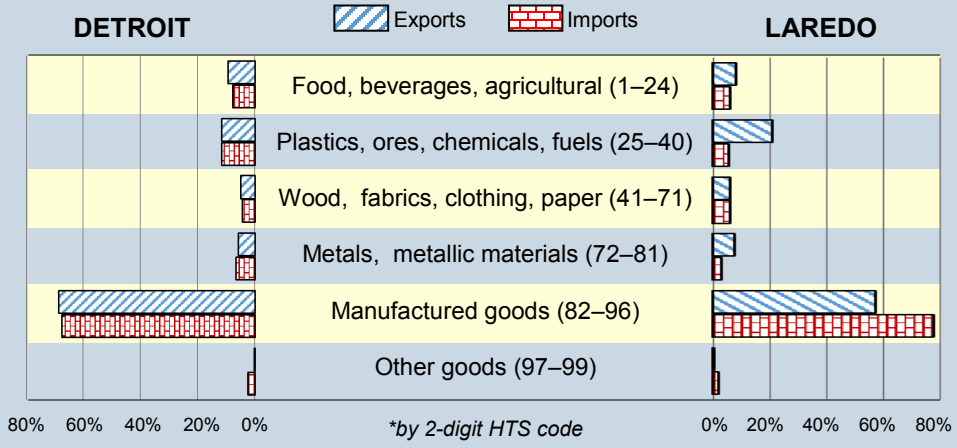
Laredo: $106.3 B Imports

LEGEND

Percent of goods traversing a port that is associated with a given state. A state with >15% is individually labeled with (%)



Breakdown of commodities* crossing these ports



*by 2-digit HTS code

fluctuations in crude oil and the value-added nature of pipeline exports to Canada, which consist largely of refined oil. *With U.S. exports totaling $280 billion, Canada is a major export market for the U.S., so an administration focused on bolstering exports should focus upon trade with Canada.*

Funneling of Freight Flows. The map on Page 1 portrays the manner in which cross-border flows are accommodated at a small number of ports. The combined volume of truck- and rail-borne freight crossing both directions at each border totaled $877 billion in 2015, representing a 45.6% real increase since 2009. The map uses green squares, each representing $10 billion, to portray the two-way value of freight moving through the 13 busiest ports. The 13th-busiest port in 2015 facilitated roughly $20 billion in rail and truck trade, compared to the 13th-busiest in 2009, which saw $10 billion. Just as in 2009, the 13 busiest ports account for more than 85% of rail and truck trade value, with the remaining 15% processed by the other 93 ports. *Expediting clearance of trucks at just the 20 busiest ports would yield benefits for more than 95% of the trade crossing the two land borders.*

The graphics on Pages 2-5 portray the way in which freight flows are funneled through some of the top ports in different ways throughout the country, with distinct commodity flows at both borders in the Midwest, East, and West. These flows have been heavily shaped by NAFTA.

A Midwest Manufacturing Corridor. Cross-border surface freight flows in the Midwest region are heavily associated with manufacturing, as seen in the

graphics on Pages 2 and 3. There are integrated manufacturing supply chains that extend from Ontario and Quebec through the American Midwest to associated maquiladoras located in the Mexican borderlands. *All three NAFTA nations thus have a stake in ensuring the efficiency of freight flows along the mid-continent corridor.*

There is considerable congruity with respect to the U.S. states that are the source of exports and the destination for imports passing through Laredo and Detroit—the two busiest ports (Page 2). An overwhelming percentage of both imports and exports traversing Detroit and Laredo fall within the "manufactured goods" category, although some *inputs* to manufacturing are exported to Mexico through Laredo (i.e., plastics, ores, fuels).

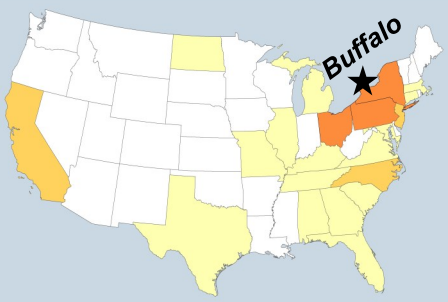
The Michigan ports (Detroit and Port Huron) are the ones at which the FAST (Free and Secure Trade) trusted-trader program has had the most success, because the nature of freight flows traversing those ports (e.g., sophisticated shippers, high-value goods, need for prompt delivery to support just-in-time manufacturing, proximity of shipper to recipient, easily secured supply chain) fits well within FAST's requirements. But it is well documented[4] that *in border regions other than Michigan, FAST's design is not as well-suited to the characteristics of cross-border freight flows.*

Patterns to the East. At southern ports, the manufacturing -centric pattern prevails along the length of the Texas–Mexico border. Hidalgo and El Paso have origin/destination patterns and commodity mixes similar to Laredo's. But along the northern border, differences are evident

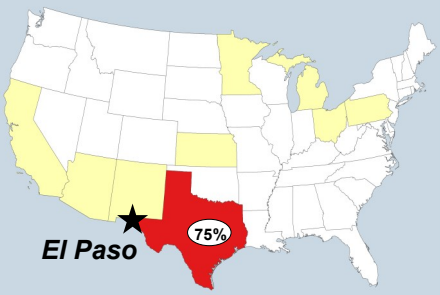
Buffalo and El Paso also support the manufacturing corridor, but goods traversing Buffalo are more varied. The economic might of California and Texas is also evident.

EXPORTS

Origins of U.S. Exports Crossing a Given Port



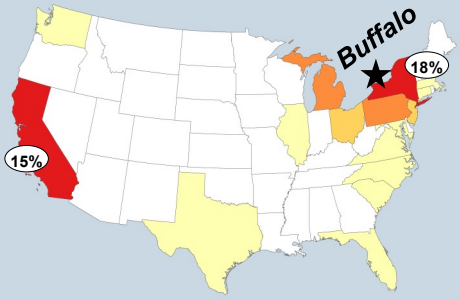
Buffalo: $41.9 B Exports



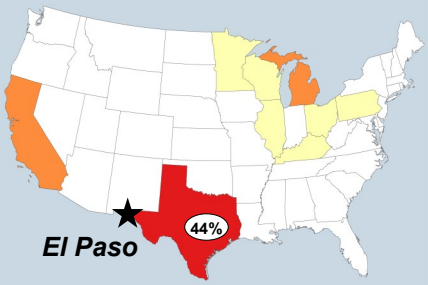
El Paso: $30.6 B Exports

IMPORTS

Destinations of U.S. Imports Crossing a Given Port



Buffalo: $36.6 B Imports

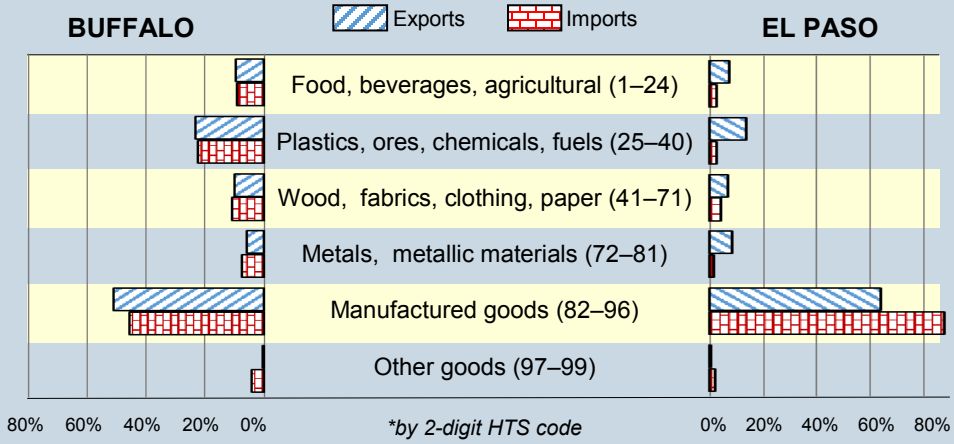


El Paso: $38.5 B Imports

LEGEND

Percent of goods traversing a port that is associated with a given state. A state with >15% is individually labeled with (%)

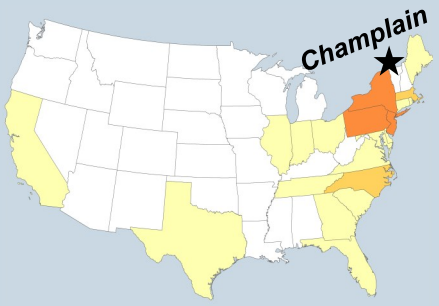
Breakdown of commodities* crossing these ports



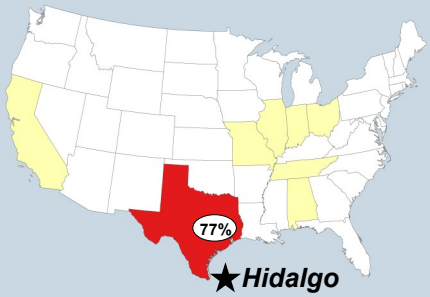
While Hidalgo is manufacturing-centric, Champlain handles a wide variety of goods (e.g., ores, agricultural, wood products).

EXPORTS

Origins of U.S. Exports Crossing a Given Port



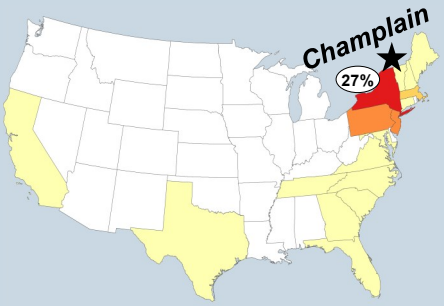
Champlain: $8.3 B Exports



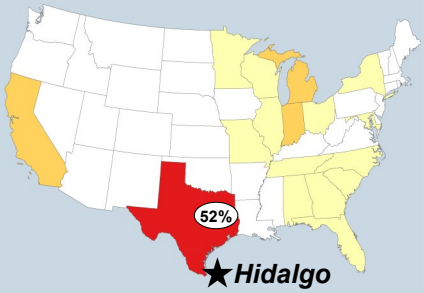
Hidalgo: $10.8 B Exports

IMPORTS

Destinations of U.S. Imports Crossing a Given Port



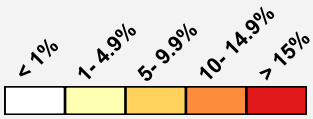
Champlain: $14.3 B Imports



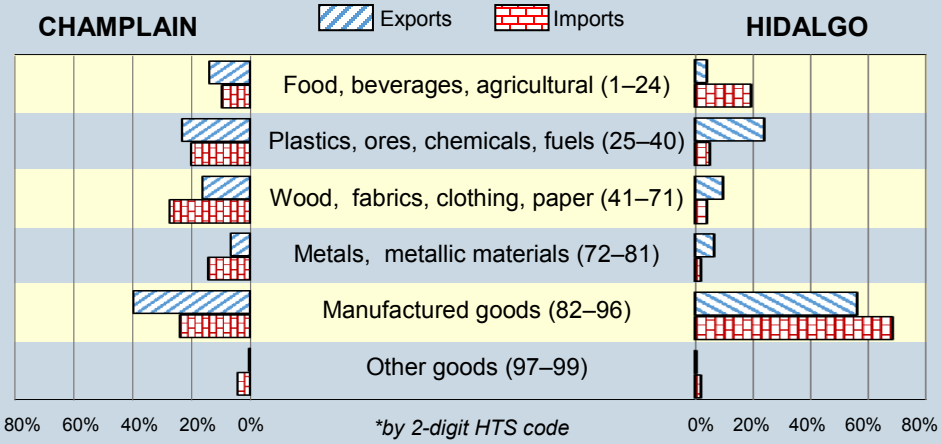
Hidalgo: $18.4 B Imports

LEGEND

Percent of goods traversing a port that is associated with a given state. A state with >15% is individually labeled with (%)



Breakdown of commodities* crossing these ports



both east and west of Michigan. At Buffalo (Page 3) there is a smaller proportion of manufactured goods within the commodity mix, and further east at Champlain (current page), the mix is yet more diverse. Natural resources (agricultural, wood, ores, metals) become significant parts of the mix. As expected given geography, Buffalo and Champlain accommodate Canada –U.S. trade flows associated with a group of New England and Atlantic Coast states.

West Coast Corridor. Much of the freight passing through Blaine has origins and destinations in various states, yet the majority of both imports and exports move north–south along the West Coast. California's large economy is again both the origin and the destination for much of the freight flowing through both Blaine and Otay Mesa (Page 5). The growing economic vibrancy of the Pacific Northwest coastal region (Eugene, OR, north to Vancouver, B.C.) is notable.

While not considered in the data presented in this Brief, trade between Asia and North America dominates the major West Coast seaports of Los Angeles, Long Beach, Oakland, Seattle–Tacoma, and Vancouver, B.C.

California and Texas play a role in all of the land-based ports analyzed in this Brief. Both states have economies rivaling those of our NAFTA neighbors, as evidenced by 2014 GDP data: California $2.31 trillion; Texas $1.65 trillion; Canada $1.79 trillion; Mexico $1.28 trillion. These two states serve as significant endpoints for trade flows through almost all of the large ports along both the northern and southern borders. In some instances, these states exist

as overwhelming endpoints for trips made through certain ports—e.g., Texas is the origin of 75% and 77%, respectively, of the exports moving south through El Paso and Hidalgo; California is the origin of 88% of exports and the destination of 67% of imports through Otay Mesa. These instances of ports that have virtually exclusive linkages with a given state's economy lend credence to *a paradigm in which states (rather than the federal government) might, at times, find it beneficial to invest in actual port-of-entry infrastructure.*

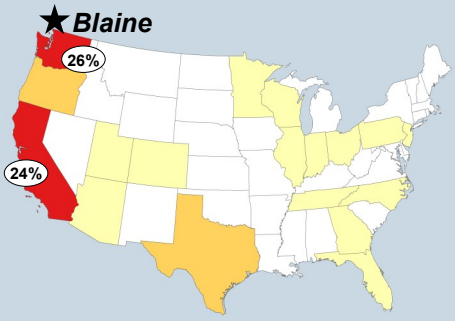
Similarities and Differences, North and South. At both borders, traffic is funneled through a small number of ports, so agencies can accomplish multiple goals (e.g., enhancing security, reducing air pollution, expediting trade) by ensuring optimal operation of those key ports. Also, each border contains a regional segment that is heavily oriented toward the mid-continent industrial sector, implying that northern and southern border management programs could be similar. There is diversity, though, along the breadth of the northern border, with resource commodities flowing south from Canada at the seaboards. This regional difference has proven problematic to the success of the FAST program along the border's entire length. Finally, the continued viability of the integrated NAFTA manufacturing paradigm depends upon efficient transportation corridors for both borders.

Post–2009 Changes. In 2011, BPRI conducted a similar analysis that was based on 2009 data. Since then, there have been some notable changes in port characteristics. In 2009, Portal,

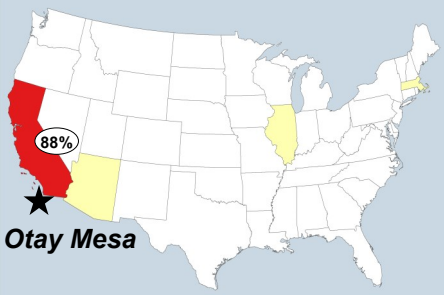
Blaine and Otay Mesa accommodate trade flows along the West Coast Corridor, and sea ports in both California and Washington accommodate Asia-Pacific trade.

EXPORTS

Origins of U.S. Exports Crossing a Given Port



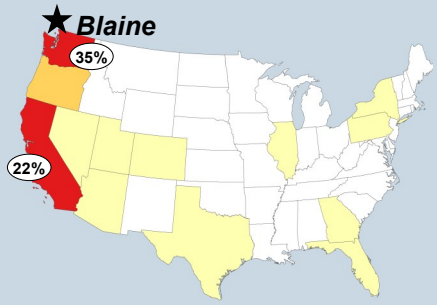
Blaine: $11.5 B Exports



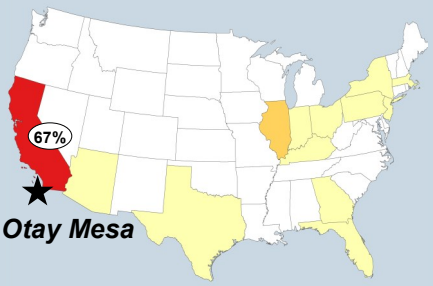
Otay Mesa: $14.5 B Exports

IMPORTS

Destinations of U.S. Imports Crossing a Given Port



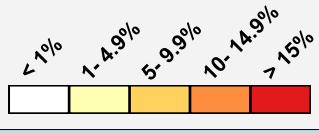
Blaine: $8.3 B Imports



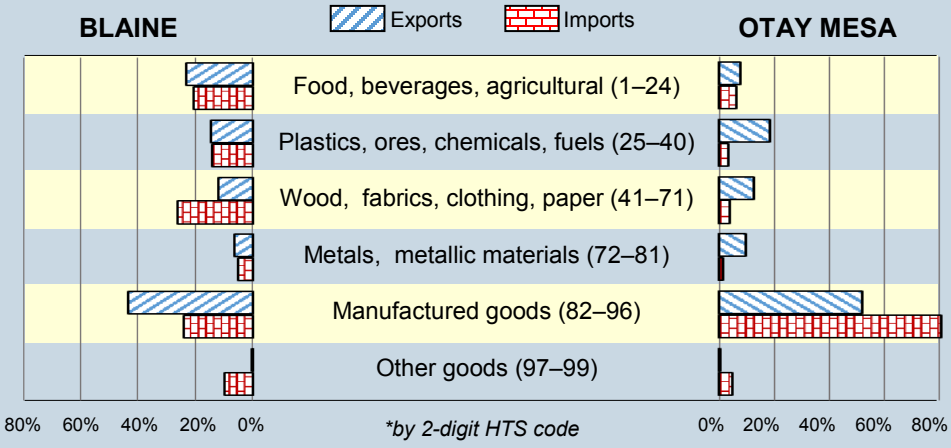
Otay Mesa: $28.2 B Imports

LEGEND

Percent of goods traversing a port that is associated with a given state. A state with >15% is individually labeled with (%)



Breakdown of commodities* crossing these ports



*by 2-digit HTS code

North Dakota ranked among the top 13 largest ports, processing $10 billion a year in two-way trade. Portal has since been replaced by Santa Teresa, New Mexico, which processes $20 billion a year. This shift in the value of traded goods from a port on the northern border to one on the southern border reflects a broader national trend. In 2009, U.S. trade with Canada exceeded U.S. trade with Mexico by $124.1 billion. In 2015, this gap shrunk to $44.1 billion. In relative terms, the value of U.S.–Canada trade grew by 34% from 2009 to 2015, while the value of U.S.–Mexico trade grew by 74% during the same time period. The dominant shift influencing these trends was slowed growth in the value of U.S. imports from Canada (a situation driven largely by lower crude oil prices)[5] and an acceleration of the value of U.S. exports to Mexico. Growth in U.S. exports to Mexico was driven by increased exports in a wide variety of commodity categories, including mineral fuels, machinery, electrical machinery, plastics, iron and steel, instruments, and motor vehicles and parts. Automobile manufacturing in particular has been a big factor influencing the trends described above, as Mexico is increasingly supplanting Canada as the top U.S. trade partner in motor vehicles and parts.[6] Since NAFTA went into effect, U.S. exports of motor vehicles and parts to Mexico have grown by 9%, while exports to Canada fell by 12.6%.[7]

Policy Implications. This Border Brief illustrates the immense value of goods crossing the U.S. southern and northern borders, as well as the corridors that these goods travel. Specific policy recommendations are *highlighted in red text* throughout the Brief. These recommendations, based on the value of freight moving through the top 13 land ports in the U.S., may help to inform the prioritization of border infrastructure investments, shape the diversification of the FAST program, and bolster cross-border transportation planning.

The role of NAFTA in the North American economy has received increased attention lately. With the new administration entering the White House in 2017, it is important to heighten awareness about the value of the U.S. trade relationship with its NAFTA neighbors,[8] as well as the way in which we make things together. Canada and Mexico are the largest destination for U.S. exports, receiving 18.7% and 15.7% of U.S. exports respectively. Following China, Canada and Mexico rank as top sources for U.S. imports, each accounting for roughly 13% of U.S. imports.[9] In addition to the value of imports and exports, North America is composed of integrated supply-chain networks that tie together the economies of Mexico, Canada, and the U.S. One-quarter of the content of U.S. imports from Canada and 40% of U.S. final goods imported from Mexico consist of value added from the U.S. itself (i.e., for every dollar the U.S. spends on imports from Mexico, $0.40 was added by the U.S.).[10] If NAFTA is renegotiated under the Trump administration, it will be vital to consider the impact that such a huge policy shift may have both on U.S. export markets and on the ability of the U.S. to produce goods—a consideration that is sector-specific. A policy change that increases friction in the trade relationship between the U.S. and Mexico is likely to have repercussions throughout important parts of the U.S. economy.

Endnotes

1. This Brief updates a previously published analysis, "Cross-Border Freight Flows at the Two Land Borders," Border Policy Brief, Volume 6, No. 1, Winter, 2011. Available at: http://www.wwu.edu/bpri/files/2011_Winter_Border_Brief.pdf.
2. The database is maintained by the U.S. Bureau of Transportation Statistics and is available at: https://transborder.bts.gov/programs/international/transborder/. It includes 106 land ports-of-entry (80 on the northern border and 26 on the southern). There are more actual crossings than that, but some neighboring crossings are grouped into consolidated administrative ports.
3. If petroleum products are excluded, the U.S. tends to have a trade surplus with it's NAFTA partners. See Villarreal and Fergusson, "The North American Free Trade Agreement (NAFTA)," Congressional Research Service, April 16, 2015. Available at www.crs.gov.
4. For example, see Goodchild et al. (2008), "Cross Border Transportation Patterns at the Western Cascade Gateway: Implications for Mitigating the Impact of Delay on Regional Supply Chains." Available at: http://www.wwu.edu/bpri/files/2008_Jun_Report_No_6_VL_Wait_Times.pdf.
5. The nominal value of crude oil fell from $53/barrel in 2009 to $42/barrel in 2015 (Source: http://www.tradingeconomics.com/commodity/crude-oil). This shift is reflected in the reduced percentage of U.S. imports from Canada that arrive via pipeline, which fell from 20.3% of U.S. imports in 2009 to 15.8% in 2015 (the nominal dollar value of pipeline imports from Canada grew from $45.6 billion to $46.8 billion during this time).
6. See Storer and Globerman (2014), "An Assessment of Future Bilateral Trade Flows and their Implications for U.S. Border Infrastructure," BPRI Research Report 21. Available at: http://www.wwu.edu/bpri/files/2014_Globerman_Storer_Report_21.pdf.
7. Source: U.S. International Trade Commission International Trade Database. Available at: http://dataweb.usitc.gov/.
8. Ranked among the first actions that President-elect Donald Trump states he will pursue is to either renegotiate NAFTA or withdraw from it. Source: http://www.npr.org/2016/11/09/501451368/here-is-what-donald-trump-wants-to-do-in-his-first-100-days.
9. Source: U.S. International Trade Commission International Trade Database. Available at: http://dataweb.usitc.gov/.
10. See Koopman et al. (2010). "Give Credit Where Credit is Due: Tracing Value Added In Global Production Chains." National Bureau of Economic Research Working Paper No. 16426. Available at: http://www.nber.org/papers/w16426.